

E) in at least two different dimensional directions, individual members of said plurality of straight channels communicating with each other via micropores having a size of oxygen 8-ring or larger, wherein the aluminosilicate has a  $\text{SiO}_2 / \text{Al}_2\text{O}_3$  ratio of from 10 to 100, and wherein a part of Si is substituted by Ti and/or a part of Al is substituted by B in the aluminosilicate.

Please amend claims 7, 8, 15 and 16 as follows:

Claims 7 and 8, line 1 of each, change "claim 6" to —claim 22—.

2B FI 15. (Twice Amended) A catalyst for reducing nitrogen oxides (NOx) with hydrocarbons in an oxygen-rich [atmosphere] exhaust containing water vapor and sulfur oxides, comprising crystalline metallosilicate ion-exchanged with Co, said crystalline metallosilicate having a plurality of straight channels of oxygen 10-ring or larger in section, said plurality of straight channels being oriented in at least two different dimensional directions, individual members of said plurality of straight channels communicating with each other via micropores having a size of oxygen 8-ring or larger.

16. (Twice amended) A process for reducing NOx in exhaust gas, which contains hydrocarbons, [and] excess oxygen and sulfur oxides, by hydrocarbons having two or [larger number] more [of] carbons, comprising the step of contacting the exhaust gas with a catalyst which contains at least crystalline metallosilicate ion-exchanged with Co, said crystalline metallosilicate having a plurality of straight channels of oxygen 10-ring or larger in section, said plurality of straight channels being oriented in at least two different dimensional directions, individual members of said plurality of straight channels communicating with each other via micropores having a size of oxygen 8-ring or larger.

#### REMARKS

Favorable reconsideration of this application is requested in view of the above amendments and following remarks. Claim 22 reflects previous claim 6 written in independent form. The presence of sulfur oxides in an exhaust gas for which the present catalyst can be used in claims 15 and 16 is supported, for example, at pages 4 and 5 of the specification.

Claims 10–12 and 16–21 have been rejected for obviousness–type double patenting over US 5,869,013. This rejection is rendered moot by the Terminal Disclaimer provided below. Applicants are not conceding an absence of patentable distinction between the present claims and those of the '013 patent. Applicants note that the indication of Assignee on the face of the '013 patent is incomplete, and that co–Assignee of the present application Enirecerche (by change of name now EniTecnologie) is also a co–Assignee of the '013 patent. A check in the amount of \$110 is filed herewith for the disclaimer fee. Any necessary adjustment can be made to Deposit Account 13–2725.

Claims 19 and 21 have been rejected under 35 USC 112, first paragraph. This rejection is respectfully traversed. Claims 19 and 21 depend from claims 17 and 20 respectively. Claims 17 and 20 define certain characteristics of at least 90% of the hydrocarbons in the exhaust gas, i.e. requiring that they have four or fewer carbons calculated in terms of methane. Claims 19 and 21 further require that “said” 90%, i.e. the 90% mentioned in claims 17 and 20 from which claims 19 and 21 depend, is saturated hydrocarbon. Examples 5 and 9 of the present specification use propane as the hydrocarbon corresponding to “said 90%” hydrocarbon. Applicants respectfully point out that the group of saturated hydrocarbons having four or fewer carbons is well–known and therefore the Examples using the well–known saturated hydrocarbon propane are more than adequate to show that the present inventors were in possession of the invention of claims 19 and 21.

Claims 3, 4 and 15–17 have been rejected as anticipated by JP 5–220,403. This rejection is respectfully traversed.

The present product claim 15 is directed to cobalt–containing catalysts with certain dimensional characteristics. The specific requirement of the cobalt loading in the present invention provides catalysts that show durable performance even in the presence of water vapor. As shown in Example 11 (and corresponding Figure 1) of the present specification, Co–BEA exhibits a NO<sub>x</sub> conversion rate of 60% after 2,000 hours whereas Co–MFI exhibits a substantial activity reduction after about 100 hours and a 30% conversion rate after only 400 hours. Note further that Comparative Example 9 (and related Figure 3) show that Cu–BEA did not exhibit the desirable performance properties of Co–BEA. This is further evidenced by the results for Ni– and Cu– containing catalysts reported in the Declaration of Mr. Tabata filed previously.

The 5–220,403 reference suggests that a variety metals could be used with zeolite, with copper being preferred and the only metal used in the examples. The reference as a whole thus

teaches only that the metals to be used with the zeolite are essentially interchangeable, with copper providing the more desirable results. In contrast, the presently claimed catalyst requires a particular metal, and enjoys properties superior even to the product specifically preferred by the reference. Even if the reference disclosure can be considered generic to the present invention, this alone does not constitute anticipation in the absence of some teaching leading one of ordinary skill to the species or subgenus claimed. In re Kalm, 154 USPQ 10 (CCPA 1967). In the present case, nothing in the 5-220403 reference leads one to the specific combination presently claimed; as noted above, if anything the reference leads one to copper as the metal to be used with the catalyst. The reference fails to put one of ordinary skill in possession of the present invention in which the presence of a specific metal provides a superior product and therefore, there is no anticipation of the present invention.

Process claim 16 is directed to the reduction of NO<sub>x</sub> in exhaust gas and makes use of the catalyst recited in claim 15. Thus, claim 16 is not anticipated for the same reasons as claim 15 discussed above. Further, claim 16 requires that the exhaust gas being treated contains sulfur oxides. Sulfur oxides can reduce the activity of catalysts for reducing NO<sub>x</sub>. Nothing in the reference discloses or suggests a catalyst that can be used successfully with such an exhaust gas. Therefore, claim 16 is even further removed from the reference.

Claims 3, 15 and 16 have been rejected as anticipated by Tamura UK 2,238,784. This rejection is respectfully traversed.

Applicants respectfully contend that the rejection fails to address claims 15 and 16 in their present form. Pages 6-7 of the rejection refer to "claims 15 and 16 calling for the metallosilicate to have a plurality of straight channels of oxygen 8-ring or larger in section, said plurality of straight channels being oriented in at least two different dimensional directions, individual members of said plurality of straight channels communicating with each other via micropores having a size of oxygen 8-ring or larger, the straight channels oriented in at least one of said two different dimensional directions having a size in section of oxygen 10-ring or larger". However, claims 15 and 16 require (and required in the December 15, 1998 Amendment) "said crystalline metallosilicate having a plurality of straight channels of oxygen 10-ring or larger in section, said plurality of straight channels being oriented in at least two different dimensional directions". The ferrierite material used in the reference includes straight channels oriented in two different dimensional directions, but the sizes of the straight channels are 8-ring and 10-

ring. Thus, the reference does not disclose all of the claimed features and the present claims are not anticipated.

Claims 10-12 and 16-21 have been rejected as obvious over US 5,869,013. This reference has an effective 35 USC 102(e) date of October 2, 1995. Filed herewith are verified translations of the priority applications for the present application. Applicants submit that the present claims are entitled to benefit of priority earlier than the effective 35 USC 102(e) date of the reference and therefore the rejection should be withdrawn.

Claims 2-5, 10 and 15-17 have been rejected as unpatentable over JP 5-220,403. This rejection is respectfully traversed. As discussed above, the reference fails to disclose the use of cobalt as required by the present claims. As discussed above and previously, the experimental evidence of record demonstrates the significant and unexpected advantages that are achieved through the use of cobalt, and therefore any prima facie case of obviousness has been overcome.

Claims 3, 15, 16 and 19-21 have been rejected as obvious over UK 2,238,784. As discussed above, the reference fails to disclose or suggest the use of a metallosilicate having the structure of the present claims. Therefore, this rejection should be withdrawn.

#### **TERMINAL DISCLAIMER**

Petitioner, Osaka Gas Company Limited and Enirecerche S.p.A., the owners of the entire right, title and interest in the present application by virtue of Assignment recorded at Reel 8419, Frame(s) 0440, through the undersigned attorney of record, hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the above-identified application, which would extend beyond the expiration date of the full statutory term of U.S. Patent No. 5,869,013 and hereby agrees that any patent so granted on the above-identified application shall be enforceable only for and during such period that the legal title to said patent shall be the same as the legal title to U.S. Patent No. 5,869,013, this agreement to run with any patent granted on the above-identified application and to be binding upon the grantee, its successors, or assigns.

In making the above disclaimer, Petitioner does not disclaim the terminal part of any patent granted on the above-identified application that would extend to the full statutory term as presently shortened by any terminal disclaimer of U.S. Patent No. 5,869,013 in the event that any such issued patent: expires for failure to pay a maintenance fee, is held unenforceable, is found

invalid, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321(a), has all claims cancelled by a reexamination certification, or is otherwise terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer, except for the separation of legal title stated above.

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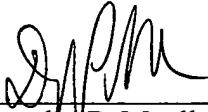
In view of the above, favorable reconsideration in the form of a Notice of Allowance is requested.

Respectfully submitted,

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Date

  
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